USFG NEWSLETTER

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USFG NEWSLETTER
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You always remember to take out the trash when the garbage truck is two doors away.

A Smith & Wesson beats four aces.

The USFG Newsletter is a quarterly publication of the US Faceters Guild.

sponsored by

New Member Briefs

Richard L. Bangert (Rick) (ID) facets on a Facetron, and could use a little help with it. He does not cut commercially or compete--yet. I hope he will tell us about a new garnet find sometime this year.

Howell Killgore (TX) also uses a Facetron, calls himself an intermediate cutter and has a case of beginner stones.

Alston C Lundgren is a doctor at a Clinic in Eden Prairie, MN, doesn't judge but would like to learn, cuts with a Facetron but not commercially. He had a case, but it was stolen when he was in Atlanta visiting C.R. Smith to perfect the Mirror Lap Technique.

Earnest L. Thaxton, Jr. (TX) cuts with a Graves Mark IV, is a top-notch cutter and can give help to others with his type of machine.

Kathleen Messura--Welcome back. Kathleen is an advanced cutter on her Facetron and does custom cutting of small stones. She is an instructor in her work, and could teach or talk on any subject if she has the time to research it. There are no competitions in South Carolina. Try a mail-in competition, Kathleen.

Jerry L. Capps--Didn't fill out the sheet, but is cutting for the 1994 Cup Challenge.

This is your newsletter and your open forum. Letters to the editor will be published, but please no political, religious, or cultish stuff. Most people's minds are like concrete--thoroughly mixed up and firmly set. Just send helpful faceting stuff. It will be appreciated and printed.

Editorial

FVS

I hope you all noticed the new name, which was voted in unanimously by those of our current membership who voted. The other two measures on the ballot also passed in similar fashion. One of our next projects is to make faceters everywhere aware that we exist not just for the competitors in the Australian Cup Challenge, or for competitors only, but for all faceters.

We next need to address ourselves to amending the Constitution and deciding about just how we are going to function as a group to get things done.

Some of you have said that you cannot go to a central location for a meeting, even once a year. Many of you have jobs and families that prevent it; for others the cost and time is too much. To a lesser degree, but still a reality, is the difficulty of meetings of the Board of Directors.

A teleconference costs $10 per person for the first minute, and 50 cents per person for each minute thereafter. So for six officers to conference on the telephone for ten minutes would cost $90, and for 20 minutes would cost $120. Until we have a lot more members to support such a cost, that leaves us with only one option--the mails.

Therefor we might consider that through this newsletter we could carry on a Continuous Open Meeting by mail, which would go like this -- motions 'from the floor'(your letters) are sent to the editor for printing in the next newsletter. Any member, including officers, upon reading the motion may then write me seconding the proposal. Seconded motions would then be put up for a general vote to the members in a ballot accompanying the next newsletter.

It would be too cumbersome to have all the members vote on every little decision. But certainly we should all vote on any changes to our Constitution, and in the amending of that document we should set up some general guidelines regarding what the Board of Directors may enact on their own and what should go up for a general vote. Certainly the Board should have the power to enact 1) measures necessary to operation of the guild which are not critical enough to require full membership vote, and 2) temporary or stop-gap measures that have immediate effect but should be subject to a regular vote by the members at a later date.

If the Board of Directors itself cannot meet we may have to provide for a meeting-by-mail for the Board also.

I sent you all a letter, speaking not as editor but as a member, containing some actions that I think we should take. On further thought, I think to undertake any program of such changes, we need a solid base to operate from--which means that our Constitution should first be brought in line with present realities.

Here are some general topics for your consideration for amending the Constitution. There may be other important items that I have missed, but the following are ones I've noticed:

1) The Board of Directors needs to be defined.

2) The Constitution does not limit membership to US residents, yet there has been a persistent belief that is does. Some Canadians have been turned away. Unless a majority of you express a desire to exclude non-US faceters, it must stand that all faceters are welcome.

Only full membership is defined. I have proposed having subscription-only membership, but if we are going to handle everything by mail, the distinction between the two becomes almost nil. Furthermore, if we set the dues to around $12 to $15 per year, the difference isn't worth making, so for now why don't we leave it as is.

3) Should we send a membership card to all members upon payment of dues as a form of receipt ?

4) We should have a Parliamentarian, even if we have no meetings, to make sure motions and balloting are handled properly, and that the Constitution is not violated. Walt Carss has suggested that the Vice President can do that, and I for one agree.

5) Combine certain officer duties. When we grow large enough they can be separated again. This item is one I think the Board, since it's the unit that feels the workload pinch, should be free to adjust .

6) Provide for disbursement of funds in case of disbandment.

7) Define the start of office for officers. Example: Elected officers shall take office on January 1 of even-numbered years. (the term of two years has already set.)

8) Should new members be required to have cut at least one stone ? This was discussed at the very first meeting of the USACF. On the pro side, it was felt that people who are just joiners could take office and make major decisions affecting us all. On the con side, how could it be proven that someone had not cut a stone. ? At our beginning we decided we had too many other problems organizing to bother with this issue. Do we want to take a second look at it.?

9) There are problems for me, as editor, with the present way of handling new members. If our membership increases as I believe it will, the reproducing and mailing of current year newsletter back-issues for those coming in late in the year could become just too much. So I offer for your consideration the following suggested complete addition to Section III.

ARTICLE IIIA - DEFINITIONS

1. The Board of Directors, also called the Board, shall consist of all current elected officers plus the immediate past-president.
2. A Newsletter Month is any month the newsletter is scheduled to be issued. Until changed by the board, newsletter months are January, March, May, July, September, November, for six issues per year.
3. The Member Start-Date is the date membership begins after payment of dues. It applies to all types of membership. It is tied to the schedule for the issuance of the newsletter, and is the First Day of the next Newsletter Month following payment of dues.
4. Open Meeting refers to the continuous exchange of motions, seconding of motions, ballots and results, carried on through the USFG newsletter and through the mails.
5. The term "he" used hereinafter, may also mean "she".

These suggestions and others which you want considered should appear in the next newsletter on the same ballot as for the election of officers for the 1994-1996 term. Please take the time to look over the Constitution and send in your ideas, but not too long since the September newsletter is not very far away.

When we passed the Constitution, our expectations about holding meetings to do the work were unrealistic. If we revise it to bring it in line with current reality--require only that which we know we can do--such as work through the mail--make membership easier to handle, project a new image and contact prospective members, then I think we can survive.

Along with the rest of you I overlooked many of the items listed here, so I'm sure other things are being overlooked. Can you help us all out by spotting them? Let's get it right this time.

Some of you have said you would like to help, but couldn't travel. Here's how you can help without moving. Just write a letter saying that you like or don't like the proposals being made. If you can tell us why, or offer a new idea, that would be more helpful than you can possibly imagine.

----- FVS -----

Norm Steele has given permission to print the WHAT'S NEW section of the Seattle Faceter Design in our newsletter. This has been very popular in Australia, and should help keep everyone informed on newly published designs and where to get them. This will be a regular feature from now on, unless too many of you are getting it direct. We can run a poll on it later.

Your Busy Newsletter Editor

International Rules

FVS

The Australian Faceters Guild has assigned Irene Whitham to replace Rupert Pickrell to correspond with your editor on the creation of a set of international rules. Irene has a panel assigned to work with her on both their Australian Rules and the International Rules. I have received input from Alex Wolkonski of France and Piet van Zanten of the Netherlands, and extend the same invitation to members of the Canadian guilds. Anyone who wishes may contribute to this project. U.S. faceters send your ideas or requests to this editor. Others may send them to me or to Irene Whitham, 24 Duntroon Ave. Roseville N.S.W. 2069 Australia. To get the ball rolling I sent a first rough draft off to Irene. The ball is in their court, but we don't have to wait for it to bounce back before you send in your wishes to your editor, who has been selected by our members to funnel ideas to the Australians.

In that first rough draft I threw in the idea of having the Main Event every four years instead of two, just for the sake of having it considered. In both of the past two contests some cutters had finished cutting designs that were still being reworked by computers.

Winners at Calgary

Walt Carss, Norm Steele, and Hugh Racketts attended the Northwest Conference at Calgary, Canada. Walt reports some of the winners: In the **Advanced Class** Fred G. Billcock of Victoria, B.C. came in first. In the **Champion Class** Ralph Mathewson of Lewiston, ID took first with a perfect 100, Terry Low of Amboy, WA took second, Frank Dickson of NSW, Australia and Vernon Larson of Nanaino, B.C. tied for third. In the **Past Champion Class** Craig Newcomb from Burley, ID came in first, with Dan Zally of Holmdel, NJ taking second. There were a large number of entries this year.

GEMSTONE ALERT: Gemologist Bill Vance, with Rough Times, a gemstone dealer in San Diego, would like to pass some information along. "There is glass being sold as aquamarine, morganite (the peach/pink variety of beryl) and tourmaline. There are hundreds and perhaps thousands of carats of this material on the market. The stones appear to be native cut and of Brazilian origin. Visually, these stones are difficult to detect, but a few gemological tests expose these fakes for what they are. The refractive index of the glass fakes varies from 1.51 to 1.53, where beryl is actually 1.57 and tourmaline is 1.62-1.64. The fakes are singularly refractive. The simplest separation test is by fluorescence. Under short wave, the glass is chalky blue with violet tones. Under long wave, the glass is a dull yellow. Real beryl and tourmalines are inert. A WORD OF CAUTION: The glass aquamarines fool the blue topaz/aquamarine separation filters."
(From FACETS, April 1993, via Emerald Gems)

Polishing--Part 3.

by Merrill O. Murphy

(courtesy of Texas Faceters Guild Newsletter, January, 1990)

(editors note: this series of articles was written three or more years ago, and may not represent Mr. Murphy's current views)

Recap - In previous issues of the newsletter, I've discussed the following subjects: Polishing with diamond, The continuing evolution of the ceramic lap, The Facetron methyl methacrylate (Corian) lap, Laps and hard waxes, Laps - scratches, pressure, speed and particle tumbling, and the various theories of polishing and their demise.

I have also stated that a new and better theory of polishing is waiting in the wings and will soon move to center stage. I will tackle that new theory in this issue, but a few other items need attention first. And, perhaps, you'd like to review the January and February issues before traveling further down the polishing "yellow brick road".

Carnauba Wax Film - I bought a can of TREWAX brand paste wax for hardwood floors at a lumber and hardware store a week or so ago. It is a Carnauba wax-based product with other waxes and a solvent, no abrasives or contaminants. I rubbed some of the wax on a 3-mil disc of drafting Mylar using about the same technique I'd use to hand-wax a piece of furniture. I just rubbed the wax on with a clean cloth, waited a minute or two, then rubbed it lightly with a second cloth. The proof step consisted of attempts to polish stones in the Mho's 3 to 6 hardness range using water slurries of Linde A as the polishing agent.

My first tries weren't so red hot. The wax layer wasn't smooth. It was rough enough to cause my stones to bounce and peel off wax. Polishing was only fair. The fault was mine. I had applied the wax in the wrong manner - with the lap stopped. I scratched my head a bit, and the old bulb lighted above my noggin.

Trial number 2 used another 3-mil disc of drafting Mylar, frosted side up, over a 1/4-inch thick Plexiglass lap. I rubbed some wax on a soft, clean cloth, and with the lap turning, rubbed the cloth gently across the surface for, maybe, a half a minute, taking special care to apply a very thin, very smooth wax layer. Then I waited about five minutes before polishing the wax film gently with a second clean cloth. No bumping! I applied a thin slurry of Linde A in water - just a little of it - and repeated the experiments. The results were pretty good, but it takes a little getting used to.

Keep the surface fairly wet. Use the smallest amount of pressure that results in polishing, and use very little polishing agent. An unexpected virtue! Polished facets were not rounded badly as usually results with a thick wax lap. The sharper facets probably result from the thinness of the wax and Mylar layers against the moderately hard Plexiglas support.

I suggest you try the wax film technique yourself. Try it in polishing such materials as fluorite, apatite, etc. I suggest polishing speeds of 30 to 150 RPM, if you have that capability. Use Linde A or B slurry sparingly. Or try spray diamond (50,000 grit or smaller), spraying the diamond onto the spinning, wax-filmed lap. With a clean finger, gently massage the diamond particles into the wax. Then gently blot off the spray liquid with a Kimwipe or soft, lint-free cloth. Now, you can use water to dampen the lap while polishing. I bet it will work for you.

Three-mil drafting Mylar is a good base for the wax. You can buy it at drafting supply stores. Cut a circle of the Mylar with a shaft hole at the center, wet the surface of a Plexiglas lap or a fine-grit cutting lap, set the Mylar disk on the wet lap and tighten the shaft nut. (The Mylar will stick to the wet lap because there is now a vacuum between lap and Mylar). I applied the wax film to the frosted side of the Mylar, but the smooth side might work equally well.

Lap Hardness - In general, the softer the gem being polished, the softer the polishing lap should be. A ceramic lap is fine for polishing sapphire, but tin or tin/lead works much better when polishing gems of 4 to 6 hardness. The table, partly extracted from Faceting for Amateurs by Glen and Martha Vargas, gives a comparative hardness of lap materials.

Lap Material	Mho's Hardness*	Components
Ceramic	9.0	Aluminum Oxide**
Meehanite Iron	5.0	Special Cast Iron
Corian	4.0	Methyl Methacrylate Plastic
Copper	3.0	Pure Rolled Copper
Zinc	2.5	Pure Zinc
Plexiglas (Lucite)	2.0	Acrylic Plastic
Typemetal	2.0	Lead, Tin, Antimony/ Copper
Tin/Lead	2.0	Lead & Tin 50% - 50%
Pewter	2.0	Lead, Tin, Others, Variable
Tin/Typemetal	1.8	Variable Percentages
Tin	1.7	Pure Tin
Mylar	1.6	Flexible Thin Plastic
Lead	1.5	Pure Lead
Polyurethane ***	1.5	High Porosity Plastic
Vinyl	1.0	Flexible Plastic
Beeswax/Carnauba	0.3	90% Beeswax/ 10% Carnauba
Beeswax	0.2	Pure Beeswax

* Approximate comparative hardness values.
** Various ceramic compositions are possible with some variation in hardness.
*** A cast plastic of about 78 Durometer hardness now being used in bowling balls because of its high porosity. Expensive.

So, I've procrastinated long enough; the time has come when I must begin to tell you about a new theory of polishing.

Breakthrough - For several years, a division of Sandia National Laboratories, Albuquerque, N.M., has been investigating the fracturing and propagation of fractures in glass. The studies are continuing, but they reached a high point with the publication of an article in the December 1987 Scientific American. The article, "The Fracutring of Glass" by Terry A. Michalske and Bruce C. Bunker, is ABSOLUTELY MUST READING. You can get a print of it at low cost from the microfiche machines at your public library. You don't know how to work the machine? No matter; ask the reference librarian to help you.

So, what does the fracturing of glass have to do with gem polishing? The answer is, "everything". Most of us (including me) will not have the physical-chemical background to understand, completely, the details presented in the article. But you'll easily understand the basic significance of whatMichalske and Bunker are saying. They mention not one word about polishing, but I have discussed the polishing implications, by phone, with Mr. Michalske. He agreed with my extrapolation to our field of interest.

Michalske and Bunker find that glass, in a high vacuum, is "intrinsically one of the strongest materials known". But we seldom see it in a vacuum. Polished glass surfaces don't stay polished. Abrasives and chemicals initiate microscopic surface cracks and scratches. Plain old water is one of the most powerful chemicals attacking glass, and it attacks at the root of these minute surface cracks. Water, in liquid or vapor form, can accelerate the rate of fracture growth MORE THAT A MILLION TIMES!

How does it do that? Water has a very small molecule - after all, it is composed of two simple gases, hydrogen and oxygen. It can reach into the tips of the narrowest cracks. Most molecules are larger than the crack tip width. Glass is, basically a silicon oxide. Water, reaching microscopic crack tips, causes a cleaving of the silicon-oxygen molecules at the contact surface and a cleaving of the hydrogen-oxygen molecules, also at the contact surfaces. Atoms, forming the glass and water molecules, are normally held together by a very strong electrical attraction - the atoms are said to be "bonded" to become molecules. With the cleaving, a new bonding takes place to form "hydroxyls". (A hydroxyl is any chemical containing an OH in its formula. Hydroxides, such as lye, acids and alcohols are hydroxyls).

The new bonding links silicon, oxygen and hydrogen into hydroxyl molecules. But remember that the changed region is exceedingly thin. It is also very weak as compared to normal glass. When the glass is stressed, the hydroxyl film fractures, deepening the fracture zone by one molecule and exposing a new surface to the water. The process repeats over and over, rapidly deepening the crack. Stress, which further speeds up the process, is simply a bending force applied to the glass sample.

I can hear you saying, "okay, that's fine for glass fracturing, but I still don't see how it applies to gem polishing."

Trust me. It applies. There are only two differences, and they are only minor. There is the direction of the stress. In polishing, we apply pressure downward toward the lap while frictional pressure is exerted parallel to the lap surface. Both are stresses; both help the water to attack surface irregularities in place of the cracks studied in glass fracture. Hydroxyls form thin films at surface

No! 2 don't

irregularities where stress is greatest. Some of the hydroxyls are water soluble. If not soluble, they are always relatively soft and only one molecule thick. The lap and polishing agents easily plane them off as they form. Now you know why tripoli (finely graded sand), hardness 7, can polish sapphire, hardness 9.

"But," you say, "we're dealing with gems, not glass. The composition is different."

Gotcha! I consulted "Faceting for Amateurs" by Glen and Martha Vargas They list 101 natural minerals suited for faceting. Mineral families, such as garnet, are listed as a single mineral. The list is not complete since it includes no exclusively man-made substances and excludes materials like common salt. Many of the listed minerals are chemically complex. But I found the following:

43 silicates (having Six Ox at the end of the formula).
12 Oxides (having Ox at the end of the formula).
11 carbonates (having CxOx at the end of the formula)
9 phosphates (having PxOx at the end of the formula).
6 borates (having BxOx at the end of the formula).
4 sulfates (having SxOx at the end of the formula).
4 sulfides (having Sx at the end of the formula).
2 fluorides (having Fx at the end of the formula).
2 tantalates (having TaxOx at the end of the formula).
1 chromate (having CrxOx at the end of the formula).
1 arsenate (having AsxOx at the end of the formula).

fluorides, a carbide, amber and two elements, diamond and sulfur. Of those, I suspect that all but amber can also form the hydroxyl bond.

Now, read the Scientific American article I've told you about and do some cogitating. Next month, I'll go into some ramifications of this new theory and explain why I've delayed telling you about it. And, by all means, shoot me down, if you can.

GEMCAD

For those of you who have IBM compatible computers, Robert Strickland has a facet design program called GEMCAD that is like actually cutting a stone. His other programs are GemRay, which traces light-rays through the 'stone', and GemDot and GemPlot for printing diagrams for publication. For information on these programs, including price, write to:

Robert W. Strickland
6408 Earlyway Drive
Austin, TX 78749-1632
Phone: 512--892-1887

Where To Get Designs

Order the following from Helen Bree, 11224 S.W. Riverwood Road, Portland, OR 97219

Sid Word: 42 Designs: $4.00
Merle Reinikka Originals $4.00

12 Best Designs Published in 1991 in Standard Format: $2.00

12 Best, Other Years, from 1979 through 1990 in Sets of 3 Years Each: $4.00

Facet Design Volumes 1-7 (7 volumes)
Introduction to Meetpoint Faceting
Electronic Database

For Price Write to:

Seattle Faceting Books
2232–78th Ave. S.E.
Mercer Island, WA 98040

Telephone: Voice & Fax: (206) 232-3228
Compuserve: 72440,3200

Star Cuts: 4 Sets--60 designs each set. $7.00 postpaid for each set.
Send Check or Money order to:
Fred W. Van Sant, PO Box 980,
Colfax, CA 95713

I have written to Alex Wolkonski seeking permission to reprint and sell his set of Mini-Barion Cuts. Will let you know about these in the next newsletter.

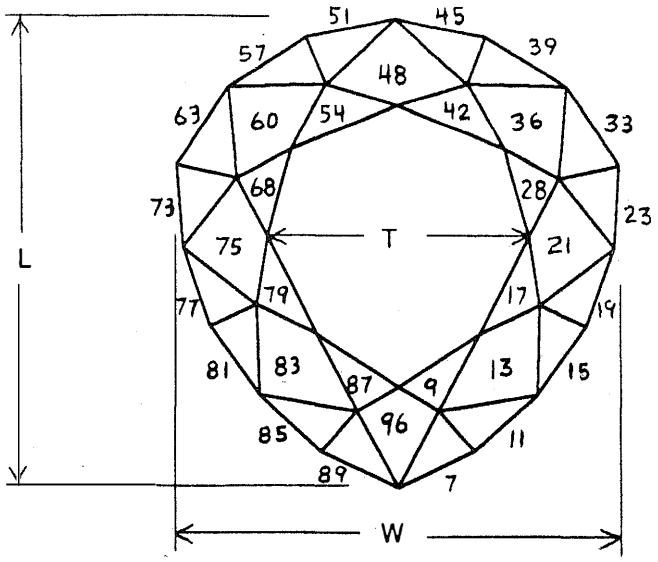
Does anyone know if the 3 Volumes of The Faceter's Gem are still available? I think I have seen copies at dealers, but don't know if they are obtainable through the mail.

In a previous issue we honored Charles Moon with a design named after him. In this issue we similarly honor our other Cup Chairman, Walter Carss, for the excellent job he has been doing. I hope all you Cup cutters appreciate the time he has put into his work for you.

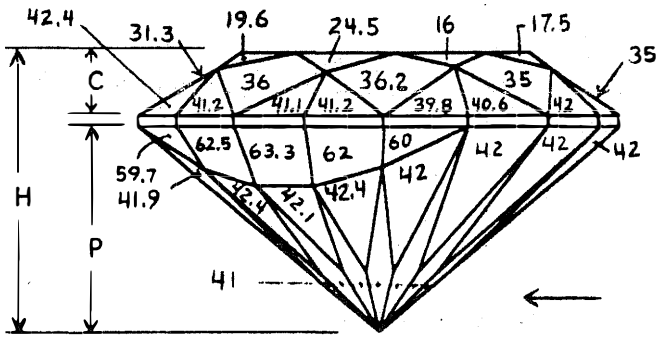
The Walt Carss Cut
Gear = 96 Angles for Corundum

Crown:		Angle	Indexes
1.	2 at	42.36°	7,89.
2.	2 at	41.15°	11,85.
3.	2 at	41.08°	15,81.
4.	2 at	41.19°	19,77.
5.	2 at	39.84°	23,73.
6.	2 at	40.58°	33,63.
7.	4 at	42.00°	39,45,51,57.
8.	1 at	31.30°	96.
9.	2 at	36.00°	13,83.
10.	2 at	36.17°	21,75.
11.	3 at	35.00°	36,48,60.
12.	2 at	19.60°	9,87.
13.	2 at	24.50°	17,79.
14.	2 at	16.00°	28,68.
15.	2 at	17.46°	42,54.

Table Area = 33.7 %
L/W = 1.082392
C/W = .1840 T/W = .590
P/W = .4705
H/W = .6745
VF = .227247
GVF = .007862



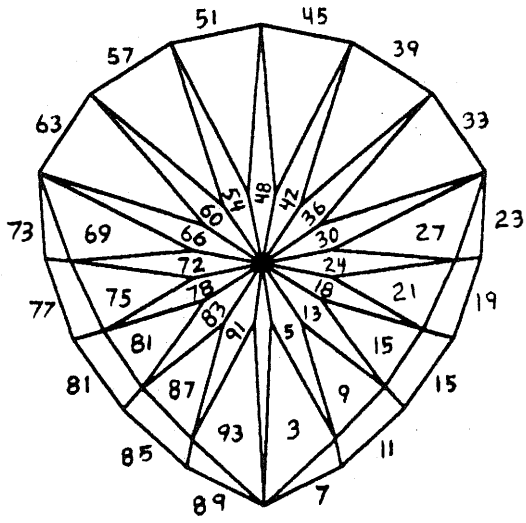
The upper 7 points and the bottom point of the stone's outline lie on a circle. The upper 6 girdle facets are equal-length, and the bottom 10 girdle facets are also equal-length, but a different one.



Maximum Cone Angle = 34.9°
CAM Preform:

1.	2 at	37.96°	7,89.
2.	2 at	39.65°	11,85.
3.	2 at	40.26°	15,81.
4.	2 at	39.65°	19,77.
5.	2 at	37.96°	23,73.
6.	6 at	35.50°	33,39,45,51,57,63.

Pavilion Angle			Indexes
1.	2 at	59.68°	7,89.
2.	2 at	62.46°	11,85.
3.	2 at	63.25°	15,81.
4.	2 at	62.01°	19,77.
5.	2 at	60.00°	23,73.
6.	6 at	42.00°	33,39,45,51,57,63.
7.	16 at	41.00°	5,13,18,24,30,36, 42,48,54,60,66, 72,78,83,91,96.
8.	2 at	41.85°	3,93.
9.	2 at	42.38°	9,87.
10.	2 at	42.13°	15,81.
11.	2 at	42.36°	21,75.
12.	2 at	42.00°	27,69.



Designed by Fred W. Van Sant

MIDWEST FACETERS FAIR

The tenth annual Faceters Fair will be held at the Dearborn Civic Center, Dearborn, Michigan on October 29,30, and 31 of 1993. Competitions in many classes are held in conjunction with the show, from single stones to cases of stones. Some of the single-stone classes do not specify the design to be cut. Most of you will be interested only in the Open Division--classes 13,14,15,16--which require a single stone cut to a given design, except that for class 15 you may cut a design of your choice.

Class 13: the PRESCRIBER CUT, Topaz, 8x10 mm.,96 index gear. This is an oval with a continuous rolled girdle. Judged on workmanship only.

Class 14: the BARION SQUARE CUSHION by Alex Wolkonski, any synthetic or man-made material. The rules state "To be cut to the exact size and facet arrangement shown on the diagram furnished.", butthe diagram sheets do not show any size, so you will have to write for the exact dimensions. Judging is on workmanship only.

Class 15: One gemstone: Original Design, any material. Design MUST have been worked out by exhibitor. If published, it must have been in the exhibitor's name. A diagram of the design would be helpful but is not required with each entry. Judging: 30 points for Design (?), 30 points for Originality of Approach (whatever that is), and40 points for workmanship. (with 60 points for whatever happens to be in the Judges mind, you'll have to trust to luck on this one. Ed.)

Class 16: Challenge Cut: the BRILLIANT SQUARE CUT by Elmer Ferris. No material or size is specified. (This is a very easy and simple cut if you have the correct angles, but I doubt those given are correct. Ed.)

Note: For classes 13,14,16, all angles on the diagram sheets are given without any decimals, so you must take them as approximate only. If you have a computer friend to work out the proper angles you can have an edge over other competitors. The newest of these designs is Wolkonski's, done 6 years ago, and the other two are much older, I think.

Stones in all of the above classes may be mailed in, but must be in the hands of the Chairperson by September 15, 1993.

Entrants must be a member of a faceting club, group, or society, or of a group associated with AFMS.

Unless you plan to pick up your stone Sunday, Oct. 31, after the awards ceremony, provide for return by mail. For information on details and an application form, write to William J. Horton, 2589 N. Hughes Rd., Howell, MI, 48843-9749. Telephone is 517--546-2159

New Chinese Sapphire Deposit

A new sapphire deposit in Shandong Province, China, was reported by the Gemological Institute of America in its winter edition of Gems and Gemology.

According to the article, sapphires from the new finds are predominantly dark blue, but also occur in blue, greenish-blue, and yellow. They average 5 to 20 millimeters, and range from transparent to translucent.

The deposie is particularly interesting to gemologists because it is one of the few known occurrences of gem-quality sapphire in situ in basaltic rock.

(from The Transfer Block, via Colored Stone, Gem Digest, May/June 1993)

Yet More Faceting Dictionary

The number of new terms being added to the Dictionary is slowing down to a trickle. Sometime in the near future I will make available a complete copy. I won't take up newsletter space for it unless you want it, but mail it separately for a dollar plus postage. Here's part of the trickle:

Natural Material: Faceting material wholly formed by natural processes.

Synthetic Material: Faceting material manufactured to mimic Natural material, having the same chemical composition and crystal structure as the Natural material it resembles.

Man-made Material: A fabricated faceting material which does not correspond in its chemical composition or crystal structure to any natural material.

Please note the difference between Man-made and Synthetic. Some writers are confusing the two.

NORTHWEST INTERNATIONAL FACETERS CONFERENCE
CALGARY, ALBERTA, CANADA
May 22-23, 1993

USFG members who attended:
Walter Carss
Norman Steele
Hubert Rackets

Program Synopsis:

Richard (Dick) Glissman: "Tool Hooks" Homemade gadgets that can be useful to faceters. Allignment aids, modified transfer gig etc

Norman Steele: "Applications of GemCad and other Computer Programs" L & S Facet Design Database over 2800 unique designs and over 3000 references, Diagrams for newsletters, Verify existing facet designs, Creating original designs (how do you know they are original)

John Birrell: "Discussion on faceting an Egg or a Sphere" Practical approach.

Charles Lewton-Brain: "Gemstone Setting"

Peter Lewin: "Gem Inclusions and Gemological Application of Microscopic Photography"

Dan Larkin: "W5 of Diamonds, The What, hoW, Who, Where and When" Worldwide mining and prospects for diamond mining. Geological indicators with special empasis on prospects in Canada.

Martin Blifernich:"Awarding and Distribution of 12 of the Best" Annual selection of 12 newly published designs. This is a project of CWFG who collect published facet design information and select three different judges each year to review them. Judges are changed each year and are not either members of CWFG or located within the State of Oregon. Every year at the Northwest Faceters Conference, the selected (by the judges) designs are announced and a booklet is prepared with cutting instructions based on the original references as well as CWFG experience with actually cutting the designs. Permission to use the designs in the booklet on a "one time basis" is usually granted so no copyright infringement occurs and the booklet is given free to conferees, other copys are attainable at a nominal charge. See attached list for selected designs.

Bob Belcher: "Journey Through the Gem Mining Areas of Brazil" ...compilation of slides and narrative based on 11 yearly trips to Brazil on gem buying epeditions.

Jan Steele "Gem Enhancement" ...summary and legal aspects of gem enhancement techniques. How it affects both amateur and professionals.

Next Northwest Faceter's Conference will be held at Sun Valley Idaho, 28-29 May 1994. Sponsored by the Intermountain Faceter's Guild. At that time they hope to complete work on the "Big Quartz" started by Cliff Jackson it is now a "Guild" project. To spread the workload they are inviting "Guest" faceters to cut a facet or too on the stone. Eventually what may be the largest quartz gem in the world will reside in the Ogden (Utah) Lapidary Museum.

Guild member Hubert Rackets (V.P) displayed his Cubic Zirconia replicas of famous diamonds.

Case of the "12 of the Best" was displayed by members of CWFG. These were mounted (for display) in plastic holders they designed and made themselves.

The competition at this conference was fierce. 18 stones to be judged one of the largest turnouts at this event in recent history. With two stones recording a perfect 100 score and also 99.5 and a 99. One entry all the way from Australia.

TWELVE BEST PUBLISHED FACET DESIGNS OF 1992

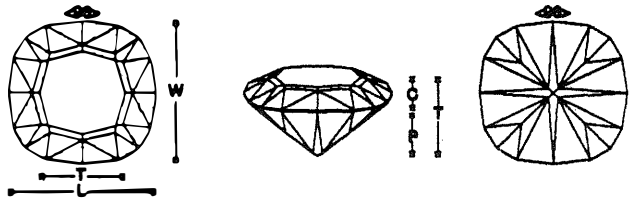
Every year since 1979 the Columbia-Willamette Faceting Club appoints a set of three independent judges who in turn select 12 of the "best" new designs published in the previous year. The only criteria is that the judges must not be a member CWFG or reside in the State of Oregon and must be a facetor.

It is now an established tradition to present a certificate award to the designers of the selected designs at the **Northwest International Faceter's Symposium.** This year the symposium was held in Calgary, Alberta, Canada on 22-23 May 1993.

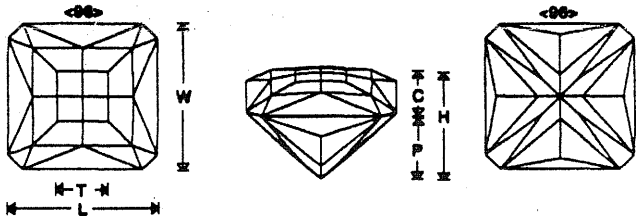
At the presentation ceremony full cutting instructions for each selected design is always shown and each attendee receives a free packet of the designs. Permission to reproduce these designs has been obtained from each faceter/designer and the editors of the journals in which the designs were published. Permission was granted for distribution only to those attending the Symposium and to the faceting guilds they represent. A copy of the packet can be purchased from the "12 BEST SELECTION COMMITTEE" P.O. Box 2136, Portland Oregon, 97208-2136.

For convenience of USFG faceters we are including references for all the 1992 selected designs here in the format used in the L & S Index to Facet Designs.

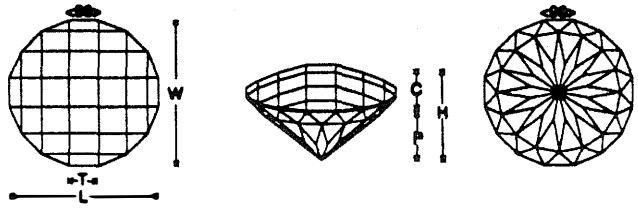
Design: 09.114 **Arrow**
Reference: Strickland, Robert; *Texas Faceters Guild Newsletter*, Oct 92



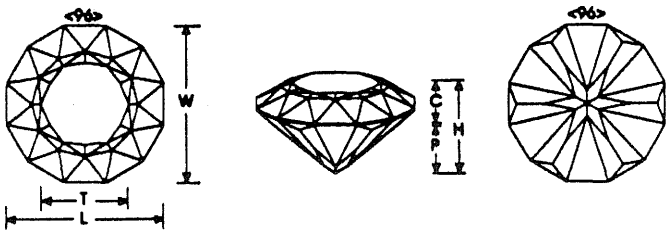
Design: 07.098 **Barion 4X4 Square**
Reference: Word, Sid; *FACETS*, Dec 92



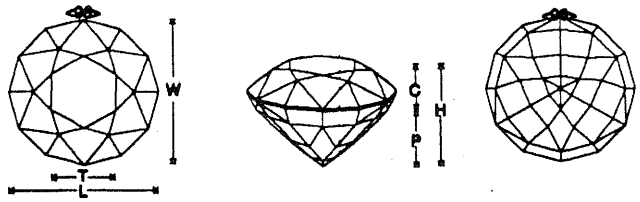
Design: 01.434 **Checkerboard Brilliant #3**
Reference: Word, Sid & Van Sant, Fred; *FACETS*, Jan 92



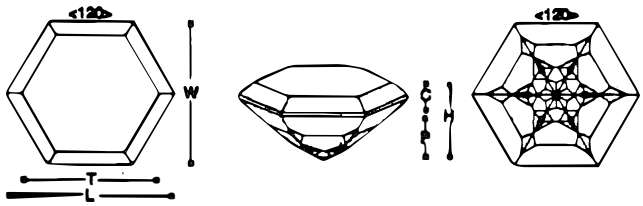
Design: 45.067 **Chinook**
Reference: Heitland, Walt; *Meet Points*, Dec 92



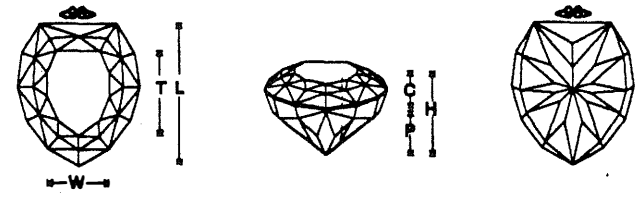
Design: 45.061 **David**
Reference: Garetz, Mark; Seattle Facetor Design, Mar 92



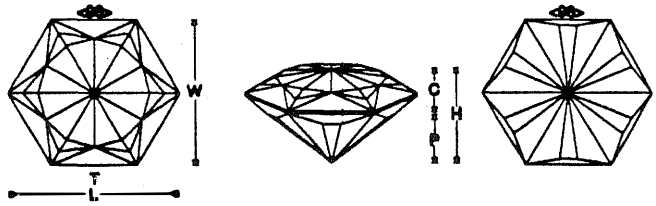
Design: 28.109 **Frosted Flakes**
Reference: Pascal, John W; Lapidary J, Mar 92



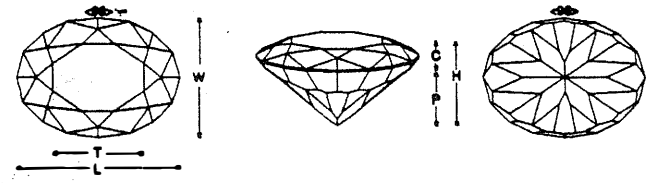
Design: 20.010 **FVS-239**
Reference: Van Sant, Fred; New Mexico Facetor, Aug 92



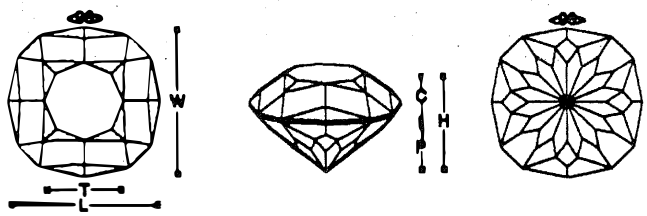
Design: 28.118A **Mini Hexagon Apex**
Reference: Steele, Norman W; Seattle Facetor Design, Sep 92



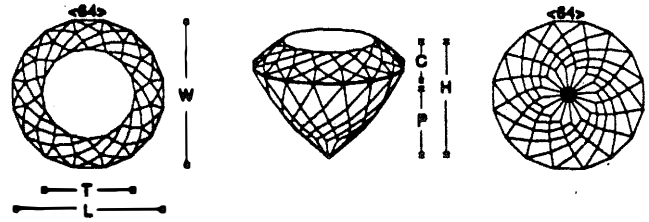
Design: 02.128A **Brilbaro Revised**
Reference: Ross, Wilf; North York Faceting Guild Newsletter, Nov 92



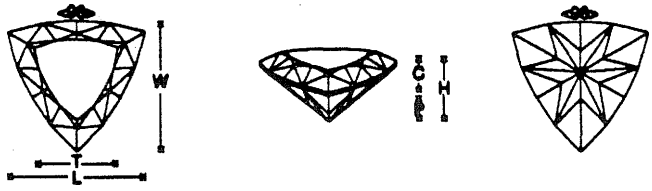
Design: 09.104 **2-16 Square Cushion**
Reference: Williams, Evan; Texas Faceter's Guild Newsletter, Oct 92



Design: 01.092 **Whirlwind**
Reference: Olsen, Don; FACETS, Nov 92



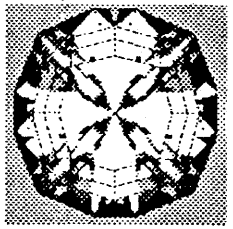
Design: 13.076 **Vertical Split Mains Trilliant**
Reference: Hunt, Murray; Meet Points, Jun 92



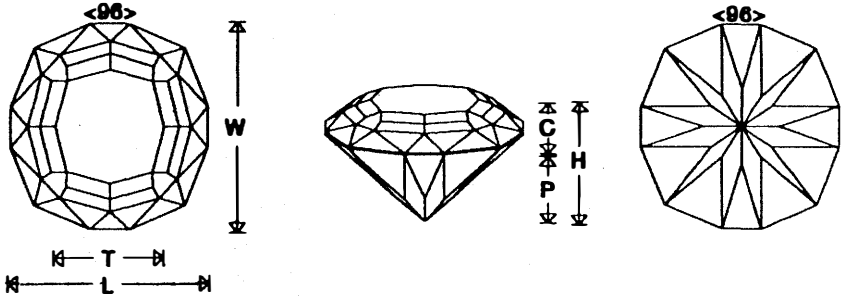
What's New

09.119 Charlie Moon Cut

This is an ECED design. Girdle facets are all cut at the same mast setting. The reason that this does not produce a "round" is that the indexing is not uniform as it is for a round. On a 96-index gear this design has a 12-6-12 split instead of 8-8-8. Many other design shapes can be cut ECED.



SPOT+Ambient for RI=1.76
Design: 09.119
Table Brt=87 Avg Brt=70



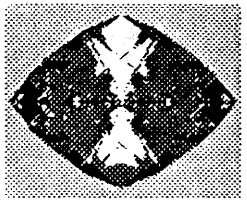
Reference: **Van Sant, Fred; *USACF Newsletter*, Mar93, p19**

96 Index	L/W=1.000	P/W=0.470	C/W=0.134	T/W=0.555
69+12 Facets	H/W=0.625	Vol =0.213W³		

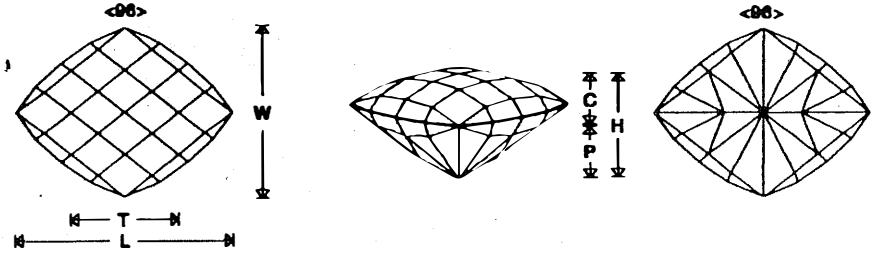
29.026 A Girl's Best Friend

This design won the "Diamond Dilemma Design Contest" which required the designer to match a Fred Van Zant crown design sketch which appeared in USAF Newsletter Feb 92.

The cutting technique is similar to 04.142 (below) involving small angle and index changes to get the diamond shaped pattern.



SPOT+Ambient for RI=1.54
Design: 29.026
Table Brt=57 Avg Brt=48

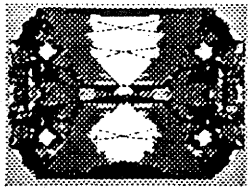


Reference: **Strickland, Robert W; *USACF Newsletter*, Mar 93, p15**

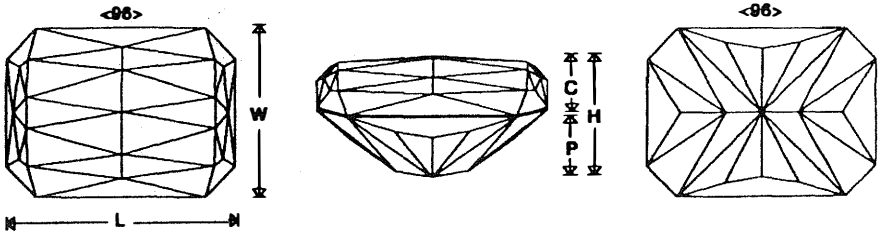
96 Index	L/W=1.335	P/W=0.451	C/W=0.184	T/W=0.496
68+16 facets	H/W=0.655	Vol =0.248 W³		

04.142 Backgammon Cut #2

This design is a Robert Stepp crown on a Charles Covill pavilion. Note similarity of brightness pattern to 29.026 above.



SPOT+Ambient for RI=1.61
Design:04.142
Table Brt=49 Avg=46

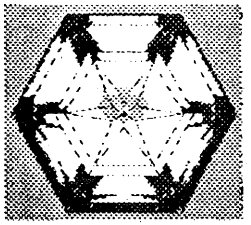


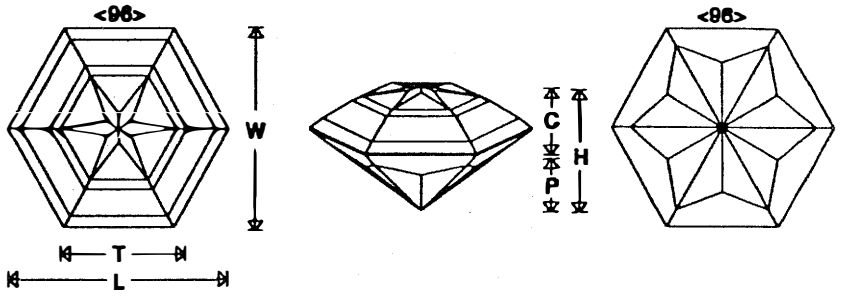
Reference: Stepp, Robert S & Covill, Charles; FACETS, Mar 93, p5

96 Index	L/W=1.422	P/W=0.496	C/W=0.219
64+8 facets	H/W=0.734	Vol =0.450 W³	

28.124 First Love

As listed in the original reference this design requires "cheating" on 12 of the 18 pavilion facets when a 96 index gear is used.





SPOT+Ambient for RI=1.76
Design: 28.124
Table Brt=95 Avg Brt=80

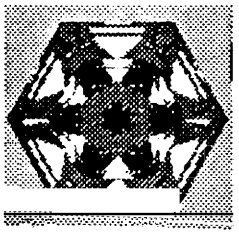
Reference: **Kolodny, Boris;** ***North York Faceting Guild Newsletter*****, Feb 93**

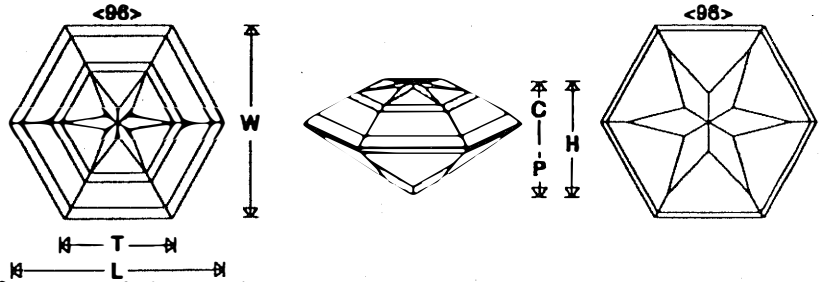
96 Index L/W=1.155 P/W=0.421 C/W=0.211 T/W=0.526
48+6 facets H/W=0.652 Vol =0.237 W³

28.125 Phoenix

Same crown as 28.124 First Love, but a pavilion that uses integral bearing index settings instead of index bearings plus extensive use of the cheater. Less use of the cheater translates to easier cutting.

This design is an example where the brightness pattern is extremely dependent on the "light model" used. The reference listed "Table Brt=58 / Avg Brt=77 for RI=1.76" based on the ISO model (uniform light)
whereas the SPOT+Ambient model we used gives very much lower values.





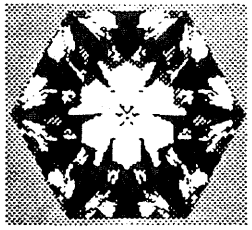
SPOT+Ambient for RI=1.76
Design: 28.125
Table Brt= 35 Avg Brt=48

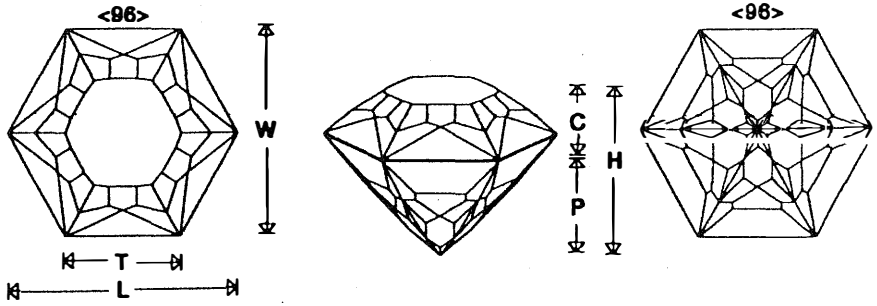
Reference: **Kolodny, Boris,** ***North York Faceting Guild Newsletter*****, Mar 93**

96 Index L/W=1.155 P/W=0.379 C/W=0.211 T/W=0.526
48+6 facets H/W=0.610 Vol =0.235W³

28.123 Olsen's Snowflake

Six symmetry in nature is characteristic of many minerals (ice is a mineral) and snowflakes in particular. Unfortunately the many small split facets add to the complexity of the design without adding much brilliance or scintillation.





SPOT+Ambient for RI=1.54
Design: 28.123
Table Brt=77 Avg Brt=47

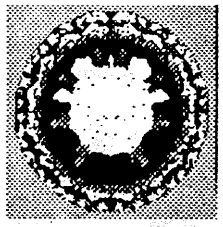
Reference: Olsen, Don; FACETS, Mar 93, p3

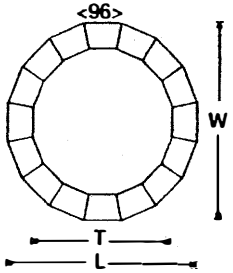
96 Index L/W=1.155 P/W=0.603 C/W=0.210 T/W=0.584
103+6 facets H/W=0.833 Vol =0.318 W³

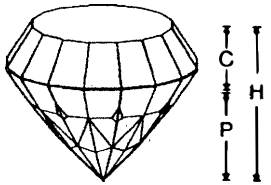
What's New

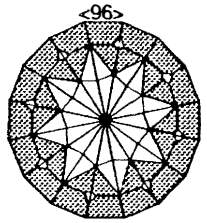
01.496 Aztec Sun

This design is "generic". The designer specifies the . . . *"Table should be large enough to encompass the flame pavilion facets thoroghly"*, but is otherwise undefined. The designer calls the main facets that make the star *"ray facets"* and the small split facets that form a circle around the star *"flame facets"*. This design is intended to simulate a bright shimmering summer sun. On the pavilion the lower two tiers are left unpolished (frosted) to emphasize the center.









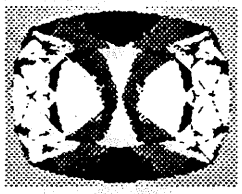
SPOT + Ambient RI=1.76
Design: 01.496
Table Brt=47 Avg Brt=43
Has 32 unpolished facets on pavilion break facets.

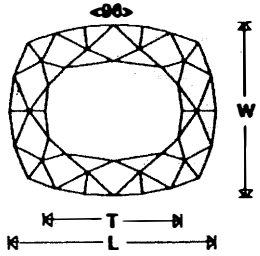
Reference: **Pascal, John W;** ***Lapidary J*****, Apr 93, p147**

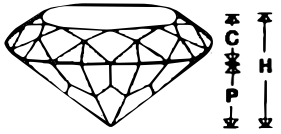
96 Index	L/W=1.000	P/W=0.607	C/W=0.204	T/W=0.737
97 + 16 facets	H/W=0.831	Vol =0.316 W³		

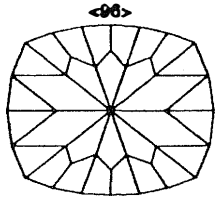
08.091 Easy Cushion #2

This design is part of the "Easy" series which is a variation of "Meetpoint". What might be considered a CAM preform (if it stoodalone) is incorporated into the design cutting sequence and cuts the break facets as well as the outline and girdle. Then the mains are cut to a new centerpoint.









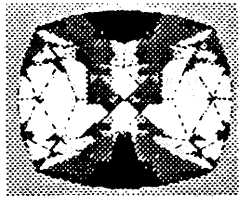
SPOT+Ambient RI=1.76
Design: 08.091
Table Brt=72 Avg Brt=63
Similiarity in brightness pattern (with 08.092) is due to the common pavilion.

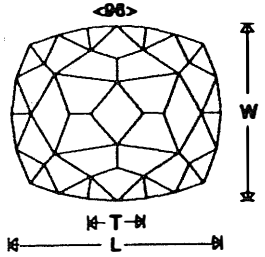
Reference: **Long, Robert H;** ***New Mexico Facetor*****, Mar 93**

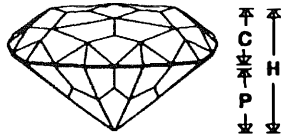
96 Index	L/W=1.250	P/W=0.511	C/W=0.146	T/W=0.832
73 + 20 facets	H/W=0.677	Vol =0.309 W³		

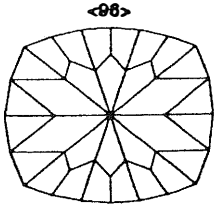
08.092 Una Poco Mesa

This design is a new crown on Bob Long's *08.091 Easy Cushion #2* pavilion. It was submitted to the New Mexico Facetor "Cushion Cut" contest. New Mexico has a Spanish language heritage and the design has a small table, hence the name which literally means "A Small Table" in Spanish.









SPOT+Ambient RI=1.76
Design: 08.092
Table Brt=79 Avg Brt=65

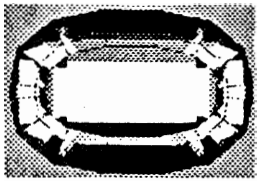
Reference: **Steele, Norman W;** ***New Mexico Facetor*****, Apr 93**

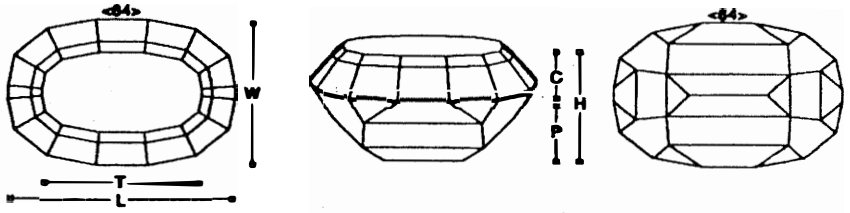
96 Index	L/W=1.250	P/W=0.511	C/W=0.196	T/W=0.286
71 + 20 facets	H/W=0.727	Vol =0.321 W³		

What's New

02.129 E.O. Combo

This design is "generic" in the sense that actual shape and L/W ratio are indeterminate. Original istructions call for an "*oval preform. . .any L/W above 1.4*", but does not provide a means to fix the relative size of the girdle segments. The design drawing shown here is but one of many that fit the given criteria using the exact indexing and relative facet position given in the reference.





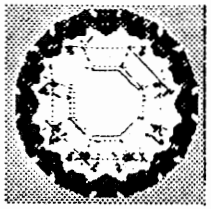
SPOT+Ambient RI=1.54
Design: 02.129
Table Brt=80 Avg Brt=59

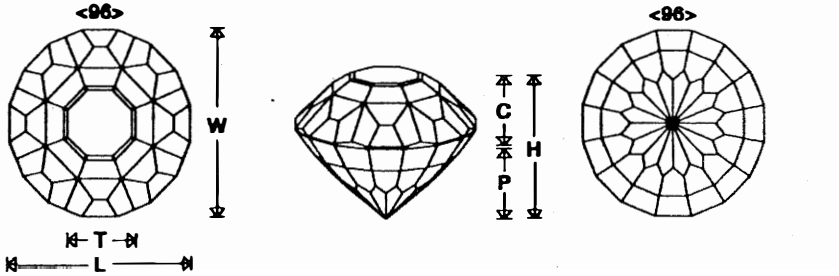
Reference: **Jackson, Clifford L; Off-the-Dop, Feb 93, v14n2**

64 Index L/W=1.519 P/W=0.532 C/W=0.243 T/W=1.070
57 + 16 facets H/W=0.824 Vol =0.570 W³

01.495 Katyre Combine Cut

The designer calls this brightness pattern a "*wagon wheel effect*". Outline is a simple ECED with 16 equal girdle segments if the pavilion is cut first, however the crown facets do not exactly match the pavilion which creates an uneven girdle.





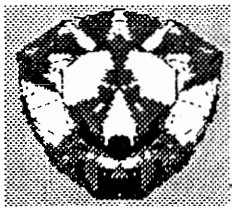
SPOT+ Ambient for RI=1.62
Design: 01.495
Table Brt=67 Avg Brt=61

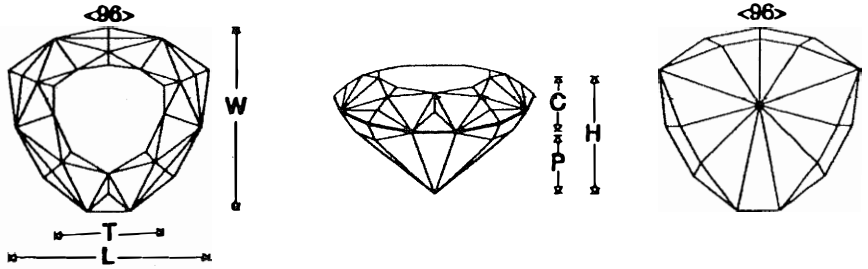
Reference: **Hannam, Trevor; *Facet Talk*, Jan-Feb 93, v9n6p29**

96 Index L/W=1.000 P/W=0.525 C/W=0.265 T/W=0.351
97 + 16 facets H/W=0.810 Vol =0.286 W³

23.034 Bettie J Cut

Another difficult to classify shape within our established system. It has eleven girdle facets but they are not equal so it does not fit in Section 39 (Undecagon) and is not quite a Section 13 (Cushion Triangle) and is too symmetrical to be put into Section44 (Freeform). Closest is Section 23 (Shield), but it is different from the classic Shield shape.





SPOT + Ambient for RI=1.76
Design: 23.034
Table Brt=67 Avg Brt=61

Reference: **VanSant, Fred W; *USACF Bulletin*, Mar 93, p20**

96 Index L/W=1.127 P/W=0.621 C/W=0.162 T/W=0.621
65 + 11 facets H/W=0.672 Vol =0.257 W³

COMING ATTRACTIONS 1993

• Faceters Fair, So. Calif. Faceters Guild, Sept. 25-26, Costa Mesa, California

Faceting Publication Sources

American Society of Gemcutters
Bulletin--THE AMERICAN GEMCUTTER
Gerald Wykoff,
PO Box 5504, Washington, DC 20016

Australian Faceting Guild (AFG)
Newsletter--FACET TALK
John Broadfoot,
PO Box 47, Sandgate, QLD. 4017 Australia

Columbia-Willamette Faceters Guild
Newsletter--FACETS
Grover Sparkman,
4927 SE Haig, Portland, OR 97206

Faceters Guild of Southern California
Newsletter--ANGLES
Virginia George,
1360 Pelham Rd. #69C
Seal Beach, CA 90740-4049

Intermountain Faceters Guild
Newsletter--OFF THE DOP (4)
Clifford L. Jackson
PO Box 696, Burley, ID 83318

Midwest Faceters Guild
Newsletter--THE MIDWEST FACETER
Kathleen Myers
11630 S. Gera Road, Birch Run, MI 48415

New Mexico Faceters Guild
Newsletter--THE NEW MEXICO FACETOR
Merrill O. Murphy
6800 Luella Anne NE,
Albuquerque, NM 87109

Northern California Faceters Guild
Newsletter--THE TRANSFER BLOCK
Betty Rosin
4270 Silver Crest Ave.,
Sacramento, CA 95821

Publication--SEATTLE FACETER DESIGN
Norman Steele 607--N. 62nd,
Seattle, WA 98103

Texas Faceters Guild
Newsletter--TFG NEWSLETTER
Betty Langdon
2914 Avenue L, South Houston, TX 77587

United States Faceters Guild
Newsletter--USFG NEWSLETTER
Fred W. Van Sant, PO Box 980,
Colfax, CA 95713

Vancouver Island Faceters Guild
Newsletter--MEET POINTS
Walt Heitland
Site 234, C-14, Port Alberni, BC,
Canada V9Y 7L6

North York Faceting Guild
Newsletter--(no name)
Bill Attwell,
188 Ramona Blvd., Markham, Ontario,
L3P 2K8, Canada

SLATE OF OFFICERS 1994-1996

Your nominating committee is Hugh Racketts and Fred Van Sant. As of this time, we have a tentative slate of officers, but it is not complete. We would like at least two people running for each slot. The more the merrier.

So far we have:

President: Jim Ball

Vice President: Walter Carss

Secretary: Glenn Klein

Treasurer: Lillian Hettich*

Editor: Fred Van Sant

Sponsor Chairman: Open

Rules/Competition: Fred Van Sant

Historian/Librarian: Open

AFMS Coordinator: Open

Membership: Jean Marr

Please figure were you can contribute: You won't have to travel to attend meetings if we all agree to the Open Meeting by Mail.

*Charles Hettich is very ill now, and is not expected to live much longer, but Lillian is taking it very well and is wise to stay active.

Current Members

Ball, James & Jo	3551 NE Surf Dr.	Lincoln City	OR	97367	503--994-3992
Bangert, Richard L	3612--18th St. "C"	Lewiston	ID	83501	208--743-3670
Billett, Paul C. & Gene	228 Grandview Rd.	Media	PA	19063	
Capps, Jerry L.	11061 U.S. HWY. 14	Mazomanie	WI	53560	608--795-4565
Carss, Col. (Ret) Walter	Rt. 3, Box 700	Brenham	TX	77833	409--836-6910
Dunn, Don E. & Shirley	933 Renown Road	Dayton	OH	45430	513--426-5112
Hettich, Charles & Lillian	31 Sea Breeze Dr.	Half Moon Bay	CA	94019	415--726-1680
Killgore, Howell	PO Box 98070	Lubbock	TX	79499	806--799-3383
Klein, Glenn	4970 Irvine Blvd. Ste-108	Irvine	CA	92720	714--731-6109
Lundgren, Alston C.	8500 Montgomery Ct.	Eden Prairie	MN	55347	612--934-1284
Marr, Jean A.	PO Box 1815	Kernersville	NC	27285	919--595-3870
McClure, John	75 Castlewood Dr.	Pleasanton	CA	94566	510--846-5793
Messura, Kathleen	721 Oriole St.	Aiken	SC	29803	803--649-7089
Moon, Charles L.	155 Myrtle Ct.	Arcata	CA	95521	707--822-6063
Rogers, Irwin (Bud)	15790 Bowman Road	Cottonwood	CA	96022	916--347-3286
Steele, Norman	607 N 62nd	Seattle	WA	98103	206--782-5770
Thaxton, Earnest L, Jr	2821--67th	Lubbock	TX	79413	806--792-4985
Van Sant, Fred W.	PO Box 980	Colfax	CA	95713	916--346-2042

BOOK--Chronicles of a Faceting Man, written by I.W. (Bud) Rogers, is full of interesting information useful to faceters. Copies can still be obtained by sending twelve dollars ($12), which includes postage to:
I.W. Rogers, 15790 Bowman Rd.
Cottonwood, CA 96022

CAM PREFORMING

Many faceters are still having trouble visualizing how a CAM Preform works. If we take the simplest example I think it will all be very clear. Imagine you have a piece of rough and you want to make a square stone using a 64 index gear and CAM. At an arbitrary angle of about 32° you cut 4 facets at indexes 64,16,32,and 48 to a TCP (Temporary Center Point). You now have the top half of a pyramid. If you then lower the mast so your dop arm is parallel to the lap and your protractor is reading 90°, and cut the **same number of facets at the same indexes to make a level line all around the stone**, you will get a square shape. That's it in a nutshell.

Of course most shapes that simple, and which can be cut directly at 90°, are commonly done so, but I've used a square just to help visualize the process. Any stone shape which has faceted girdle segments can be preformed with the CAM. The accuracy of the finished shape depends upon having an accurate protractor and a machine that is tight and true.

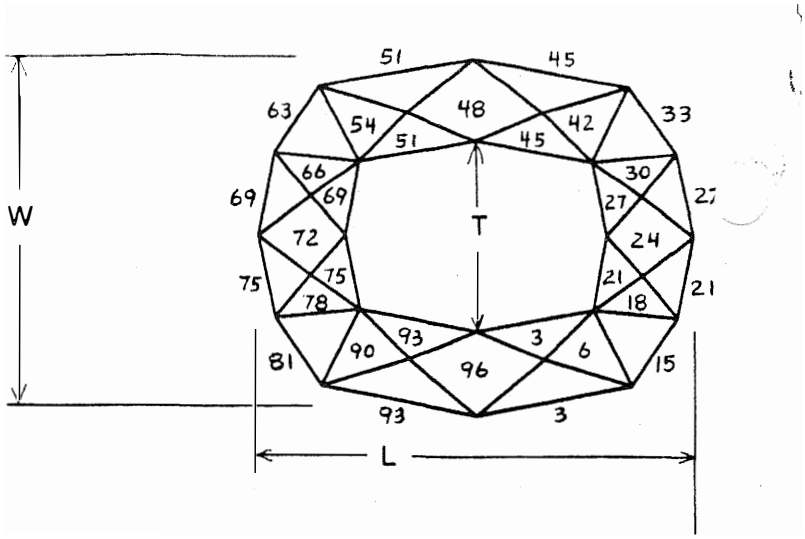
CHARLES HETTICH DIES

On Sunday, June 27, 1993, at 4 PM, Charles died quietly at the Veterans Hospital while his wife Lillian was at his bedside. Charles is remembered by us for his sense of humor and enthusiasm for faceting. He was the top U.S. cutter in the 1992 Cup Challenge competition held near Perth, Australia, last year. Even at that time he was struggling with the cancer that was to take him from us. Lillian's current thoughts are to stay there in Half Moon Bay and carry on as our Treasurer.

The set of CAM angles given can always be changed into another set by the tangent-ratio translation to produce the same shape. The girdle line made is nearly always a temporary one, with the true girdle line made further away from the culet. The set of angles you use should sometimes be adjusted to the shape of your rough material. If after dopping the pavilion area is roundish and not very deep, you should use a lower set, making the temporary girdle line closer to the culet and giving you the largest stone area as seen looking down the vertical axis.

If you plan to facet the pavilion using a TCP and meetpoint sequence cutting, there is no point in making a CAM Preform. The whole point of the CAM Preform is to make the shape first, so you can work from girdle to culet. FVS.

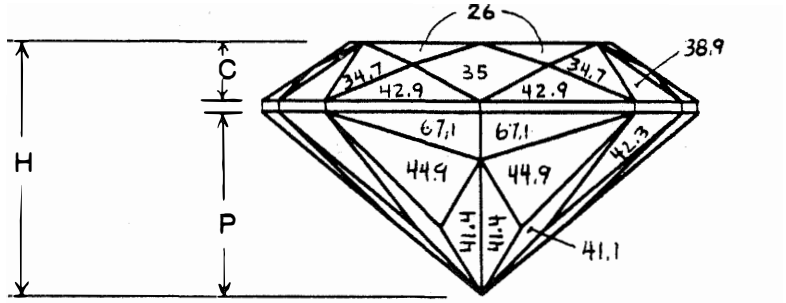
Easyform-1
Gear=96
Angles for Corundum

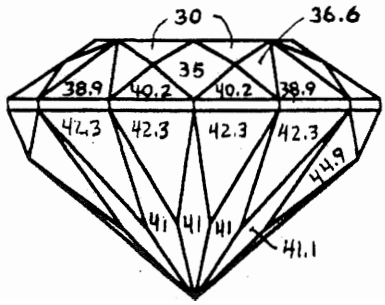


Crown:

Plane	Angle	Indexes
1. 4	at 42.93°	3,45,51,93.
2. 4	at 38.89°	15,33,63,81.
3. 4	at 40.24°	21,27,69,75.
4. 4	at 35.00°	96,24,48,72.
5. 4	at 34.73°	6,42,54,90.
6. 4	at 36.61°	18,30,66,78.
7. 4	at 30.00°	21,27,69,75.
8. 4	at 26.00°	3,45,51,93.

L/W = 1.17958
Table Area = 29.8 %
T/W = .519
C/W = .1684
P/W = .5127
H/W = .7011

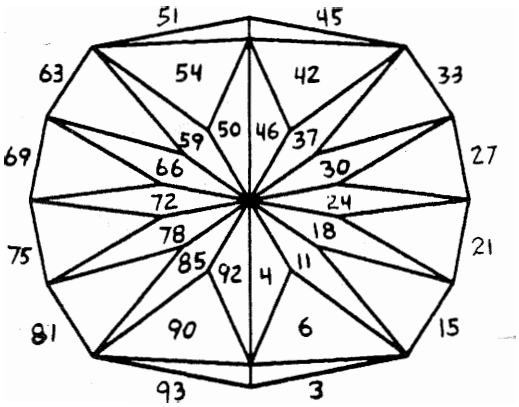




Preform:
1. cut 12 at 90° 9,15,21,27,33,39
57,63,69,75,81,87.
2. Cut 4 hinge facets at 90° to meet the last points on the end of each curve, at indices 93,3,45,51.

Pavilion:

	Angle	Indexes
1. 4	at 67.13°	3,45,51,93.
2. 4	at 42.30°	15,21,27,33, 63,69,75,81.
3. 6	at 41.00°	18,24,30,66,72,78.
4. 4	at 41.06°	11,37,59,85.
5. 4	at 41.43°	4,44,52,92.
6. 4	at 44.85°	6,42,54,90.



Designed by Fred W. Van Sant